

WHY 12?



SAFE AND SECURE TRANSPORTATION

ES-3100 Shipping Container

The Y-12 National Security Complex has developed a state-of-the-art, Type B, fissile material shipping container—the ES-3100. The ES-3100 is envisioned to be the U.S. Department of Energy's replacement for the U.S. Department of Transportation's Specification 6M container; however, its capabilities far exceed that of the 6M.

This general-purpose fissile material container will accommodate many forms of highly enriched uranium and other special nuclear materials in bulk quantities. The package uses a patented insulation technology and a containment system with a critically safe geometry—5-inch inner diameter. The inner length of 31.5 inches is ideal for many conceivable content configurations.

The ES-3100 is licensed by the U.S. Nuclear Regulatory Commission under certificate number USA/9315/B(U)F-96 (pending) and meets all the requirements of the International Atomic Energy Agency TS-R-1, as well as the *U.S. Code of Federal Regulations*, 10 CFR 71.

Features of the ES-3100

- Offers 50% more capacity than the 6M
- Has a capacity of up to three 10-inch-long convenience cans
- Licensed for HEU metal and oxide, up to 36Kg ²³⁵U
- Holds oxide in the form of UO₂, UO₃ or U₃O₈
- Holds metal forms such as broken pieces, ingots, buttons and small castings
- Has a maximum A₂ capacity of up to 100,000
- Offers easy-to-secure lids

- Has a gross shipping weight of 420 pounds

Containment vessel attributes

- Single containment system
- Stainless steel construction designed to ASME Boiler and Pressure Vessel Code, Section III
- Easy-to-install head closure with one nut to tighten
- Double O-ring seal
- Leak testable to 10⁻⁷ std cc/sec per ANSI N14.5

Outer drum attributes

- Stainless steel construction
- Kaolite 1600™ refractory insulation fully encapsulated between the drum and liner
- Refractory insulation fully encircles contents
- Easy-to-install top plug and lid with only eight fasteners
- Silicon rubber shock isolation pads throughout

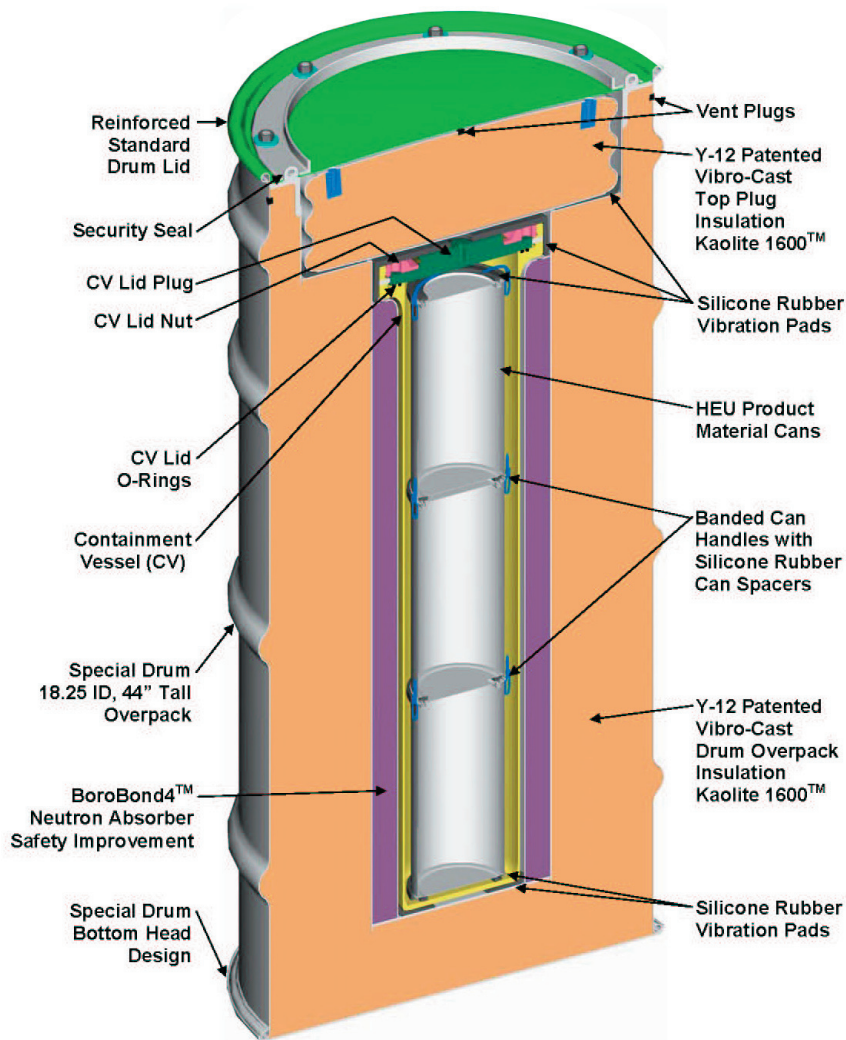
The ES-3100 shipping container passed hypothetical accident conditions tests that exceeded IAEA requirements in TS-R-1, including sequential 30-foot drop and crush tests. The maximum temperature of the containment system after the accident-conditions thermal

test was 240°F (116°C). There was no degradation of components after the accident conditions thermal test.

Y-12 continues to enhance the ES-3100 shipping container. Future capabilities of the container include transporting other material forms (such as uranyl nitrate and UF₄), transporting other isotopes (such as Pu and Np), transporting 3013 canisters, transporting materials that require shielding and transporting heat-generating materials. The ES-3100 has the potential to transport *any* fissile material.



ES-3100 shipping container



ES-3100 shipping container cutaway diagram

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